Occupational Outlook Quarterly

In this issue:

Guidance Implications of the National Defense Education Act

Career Patterns of Former Apprentices

Employment Outlook for Office-Machine Operators

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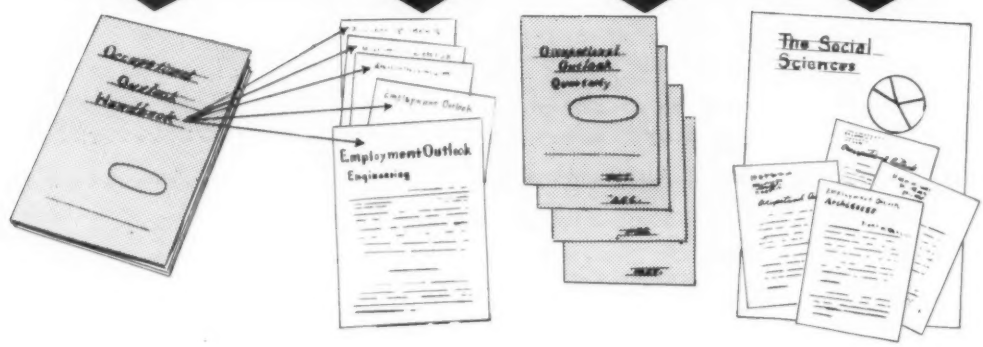

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SOME GUIDANCE IMPLICATIONS OF THE NATIONAL DEFENSE EDUCATION ACT OF 1958

by Lawrence G. Derthick*
U. S. Office of Education

On September 2, 1958--just 8 months ago--President Eisenhower signed the document which is now popularly known as the National Defense Education Act of 1958. It had passed both houses of Congress the previous month.

The basic motivation for this act is succinctly summed up in the opening paragraph (Title I, Section 101):

> *The Congress hereby finds and declares that the security of the Nation requires the fullest development of the mental resources and technical skills of its young men and women. The present emergency demands that additional and more adequate educational opportunities be made available. The defense of this Nation depends upon the mastery of modern techniques developed from complex scientific principles. It depends as well upon the discovery and development of new principles, new techniques, and new knowledge.*

Thus, the National Defense Education Act was created to provide substantial assistance in various forms to individuals, as well as to the States and local communities, in order to provide the trained and skilled manpower necessary for national defense.

Most of the provisions contained within the act, formally known as Public Law 85-864, run for 4 fiscal years, from fiscal 1959 through fiscal 1962. However, certain of the programs such as student loans and fellowships which may be in progress on June 30, 1962, may continue a few years longer.

Although the National Defense Education Act is limited in time, it appears certain to have a great influence on American education in coming years. Indeed, its effect is already being felt by many parts of our educational system. Space does not permit a discussion of all these influencing provisions, such as graduate fellowships, research in television and other communication mediums for educational purposes, and the development of language centers and institutes. We are confining this article to those provisions which are of the most immediate importance to secondary school students planning their futures, and to the counselors and guidance officers who are helping them.

There are a total of 10 divisions, or Titles, in the National Defense Education Act. The three which are currently of special interest to the groups just mentioned are Title II (Loans to Students in Institutions of Higher Education); Title V (Guidance, Counseling, and Testing; Identification and Encouragement of Able Students); and Title VIII (Area Vocational Education Programs).

Loans to College Students

The student loan program of Title II is directed at providing substantial financial assistance to worthy and needy college students. The words "worthy" and "needy" are keys to an understanding of the loan program. They clearly indicate that a young person must prove that he can do college work and that he needs financial assistance if he is to continue his education.

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There is no question but that many of our college students are in immediate need of financial help. The cost of a college education has been rising steadily since World War II. This, combined with the pressure of financial resources among most young people, makes a college education difficult, if not impossible, for many to obtain. There are not enough scholarships for all those needing them.

The money problem is certainly an important reason why only half of the top 25 percent of each year's graduating class goes on to college--and why only half of those who do go on continue to graduation.

Title II will help reduce the deplorable loss of talent. But in order to benefit from it, there are several important facts that high school students and guidance officers should know:

1. In early March of this year, approximately 1,230 colleges and universities had agreed to participate in the program. It is essential that, prior to enrolling in any institution, the student who desires financial help check to see if it has established a student loan fund.

2. Student loans will be granted only to those who have been accepted for enrollment on a full-time undergraduate or graduate basis, show that they are capable of "maintaining good standing" in their course of study, and show need for financial help.

3. Special consideration will be given to students with superior academic backgrounds who express a desire to teach in elementary or secondary schools, and to students who have demonstrated a superior capacity or preparation in science, mathematics, engineering, or a modern foreign language. This does not mean that students with other interests are excluded from the possibility of receiving loans. It does indicate that preference will be given to those planning to teach, and to those demonstrating ability in the four subjects listed.

4. Loans can be for as much as $1,000 a year and for as many as 5 years. But it would be unwise for students to count on receiving the maximum each year, because the demand for loans probably will exceed the supply of funds. However, a great many students who meet the requirements which have been stated above will receive substantial amounts of money to assist them in their education.

5. The repayment of the loans is made as convenient and practical as possible for students. They need not begin repayment until 1 full year following the date on which they cease being full-time students. Then, payments may be made in 10 annual installments and the interest charge of 3 percent a year does not begin until the first repayment. In other words, the loans are made without interest until a year after the educational program is completed. Incidentally, student borrowers can begin repayment within less than 1 year if they desire, and they can pay off sooner than the 10-year limit.

6. There are other attractive special conditions about repayment of loans. For example, if a borrower goes into the Armed Forces of the United States, his repayments and interest charges stop if his length of service does not exceed 3 years. Furthermore, the 3-year period does not count against the 10-year limit on repayment. If a borrower dies or becomes permanently and totally disabled, the liability to repay is canceled.

7. Finally, if a borrower becomes a full-time teacher in a public elementary or secondary school, he is forgiven the principal and interest on his loan at the rate of 10 percent a year up to a maximum of 5 years. Thus he can be forgiven as much as half the loan.

We cannot say at this early date exactly how many loans will be made during the lifetime of the act. A total of more than $247 million has been authorized for appropriation during fiscal years 1960, 1961, and 1962. This does not mean that the total

amount will be appropriated by the Congress, but it could be appropriated if Congress so desires. Since this money is to be matched at the rate of $1 by each institution for every $9 of Federal funds, it is conceivable that approximately $275 million will be available for student loans over those 3 fiscal years. This is enough to establish 275,000 loans of $1,000 each. Since most loans will be for lesser amounts, it means that a conservative estimate would indicate as many as 500,000 students could be helped by Title II in the coming 3 fiscal years.

Technicians for Defense

I should like to reserve discussion of Title V for the moment and pass on to Title VIII. The purpose of this Title is to assist in the training of technicians for defense. Here is a field of ever-expanding interest for youth. Technicians are needed in greater numbers every year to help scientists and engineers in their valuable work.

In one of our Midwestern States recently, officials of the State Department of Education called a meeting of top electronics executives and engineers. The purpose of the meeting was to determine training standards needed for electronics technicians. This was of immediate importance because it was estimated that in the next 5 years this one State would need at least 4,000 of these technicians! A similar need will exist in virtually every State and territory. Add to the anticipated demand for electronics technicians the growing need for technical workers in hundreds of other fields, and it is not difficult to understand why the future for technicians is so promising.

Title VIII is actually an amendment to the Vocational Education Act of 1946 (the George-Barden Act). The program under this Title is designed to prepare persons for employment as highly skilled technicians to occupations necessary for the National Defense and requiring proficiency in mathematics and science. This means that potential trainees under Title VIII must be carefully selected on the basis of academic aptitdue and performance if they are to profit from the training.

Programs established with funds authorized under Title VIII will consist of one or more courses of less-than-college grade conducted under public supervision and control, and run on an organized, systematic class basis. In order to attend classes, students must be either junior high school graduates or at least 15 years of age. Both youths and adults may enroll. It is expected that most programs will be on a post-high-school level. Of course, all applicants for enrollment must show that they will be able to profit from the instruction. Perhaps the most obvious evidence of this is to show a good background in science and mathematics.

The programs are under the direction of the States and territories. In order to receive funds under the Title, each State or territory must submit a plan for technician training which meets the minimum requirements outlined in the act. As soon as these requirements are met, the Commissioner of Education approves the plan and the State can then apply for its portion of the Federal appropriation which it must match dollar for dollar. Some indication of the enthusiasm for the Title is shown by the fact that all States and territories had expressed an interest in participation within 6 months of the signing of the act. Forty-four State plans had been submitted and approved within that same period of time.

As the various State programs get rolling, the training opportunities will increase to a marked degree. Many young men and women with interests in scientific fields, and possessing ability in them, will find the answer to their occupational search in technical positions. The technical training program is the way to that answer. It will be of special value to those young people who, for one reason or other, cannot go to college. It will also be a landmark in the lives of those adults who seek to increase their occupational worth or to enter new occupations.

Since there will be variations in State plans, guidance officers and counselors will have to keep fully informed of developments within their particular State and in adjacent States. Otherwise, it will not be possible to take full advantage of Title VIII.

Guidance, Counseling, and Testing

Title V has been reserved until last because it not only applies to students but will also be of direct professional assistance to many people now serving in guidance and counseling positions.

There are two major parts to this Title. Part A authorizes funds for State educational agencies to establish better guidance programs. Part B authorizes funds for the establishment of training institutes to improve the qualifications of people who are or will be engaged in counseling and guidance work in the secondary school.

State guidance programs will be conducted by the States themselves as in the case of area vocational education programs. They will submit plans to the Commissioner of Education. In fact, by early March of this year, all States and territories had expressed interest and 32 had submitted plans. Sixteen plans had been approved at that time and funds had been appropriated for State use.

The plans must show the means they intend to use in testing to identify students with outstanding aptitudes and ability. The exact type of test (or tests), how often testing will be done, and the operation of the program are left up to the States themselves. The essential point is that States must have a testing program if they wish to participate.

In the case of nonpublic schools in States which lack the authority to conduct testing in such institutions, the Commissioner is instructed to make such services available under conditions comparable to those in the public schools. No school should, therefore be left out of the "talent hunt."

In addition to testing programs, State plans must have a guidance and counseling program which does these two things:

1. Through counseling, helps individual students to understand their aptitudes and abilities and the educational goals they might hope to achieve; and

2. Encourages students with outstanding aptitudes and ability to take courses that will prepare them for admission to institutions of higher education and, upon graduation, to enter such institutions.

The programs should emphasize the "multipotentialities" of individuals. Young people who expect a school counselor to say that they should pursue one particular vocation are usually doomed to disappointment. Rather, the counselor may help the student to understand that he is capable of occupational success in several related vocational areas. These areas of occupational success are what the counselor will stress to the student.

Students identified and counseled under the State plans will provide a rich source of participants in the loan program of Title II and the training of technicians under Title VIII. So, in a very real sense the three Titles are closely related. If our growing need for professional people and technicians is to be met we must use every effort to find, counsel, and help educate our talented youth. Title V will help find and counsel them; and Titles II and VIII will assist in their further education.

Unfortunately, we have a serious shortage of professionally trained school counselors. Our high schools have less than half of the counselors they need. Only two-thirds of those available meet certification requirements. About 60 percent of our high schools have student bodies of 200 or less. Few of these can afford to provide the training necessary to prepare members of their staff for performing competent guidance and counseling work.

This is where Part B of the Title enters the picture. Under its provisions,

several institutions of higher education will operate counseling and guidance training institutes on either a short-term or regular-session basis. The funds for these institutes will come from Federal funds appropriated for that purpose as authorized by the National Defense Education Act.

By early March of this year, contracts were being negotiated with 40 institutions for the operation of guidance institutes. (See list for names of institutions.) By the close of the current fiscal year on June 30, it is anticipated that a total of 50 summer institutes will be authorized.

There are no tuition charges for students at these institutes. If they are engaged, or preparing to engage, in counseling and guidance in a public secondary school, they will also be eligible for a stipend of $75 a week for living expenses plus $15 for each dependent. Only full-time students will be enrolled in the institutes.

As the institutes get into full operation, we will see the gap between the number of well-trained counselors we have and the number we need gradually narrow. Eventually, the benefits of the professional training that will be received at these institutes should reach a great many high schools in the Nation. With improved counseling and guidance will come better students and an increased supply of the technicians and professional people we need.

The National Defense Education Act of 1958 does not guarantee that every American youth will receive all of the education he needs for occupational success. It is not a panacea--a cure-all for every student. But it does offer a good deal of help. This is especially true for the academically talented student searching for what he can best and most profitably do for himself and the Nation. It will help him find the road and give him a little push along it. But in the final analysis he must supply most of the push and drive himself.

Institutions With Which Contracts Were Being Negotiated

Boston University, Boston, Mass.
College of the City of New York, N. Y.
George Washington University, Washington, D. C.
Kansas State Teachers College, Pittsburg, Kan.
Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.
Loyola University, Chicago, Ill.
Marquette University, Milwaukee, Wis.
Marshall College, Huntington, W. Va.
Michigan State University, East Lansing, Mich.
New York University, New York, N. Y.
North Carolina State College of Agriculture and Engineering, Raleigh, N. C.
Ohio State University, Columbus, Ohio
Oklahoma State University, Stillwater, Okla.
Pennsylvania State University, University Park, Pa.
Portland Extension Center, Portland, Oreg.
Purdue University, Lafayette, Ind.
Syracuse University, Syracuse, N. Y.
Temple University, Philadelphia, Pa.
Texas Technological College, Lubbock, Tex.
University of Alabama, University, Ala.
University of California, Berkeley, Calif.
University of Florida, Gainesville, Fla.
University of Houston, Houston, Tex.
University of Illinois, Urbana, Ill.
University of Kansas, Lawrence, Kan.
University of Kentucky, Lexington, Ky.
University of Minnesota, Minneapolis, Minn.
University of Missouri, Columbia, Mo.
University of North Dakota, Grand Forks, N. Dak.
University of Pittsburgh, Pittsburgh, Pa.
University of South Carolina, Columbia, S. C.
University of Southern California, Los Angeles, Calif.
University of Tennessee, Knoxville, Tenn.
University of Texas, Austin, Tex.
University of Toledo, Toledo, Ohio
University of Utah, Salt Lake City, Utah
University of Wyoming, Laramie, Wyo.
Washington State College, Pullman, Wash.
Wayne State University, Detroit, Mich.

RECESSION, RECOVERY, AND EMPLOYMENT OPPORTUNITIES FOR YOUNG WORKERS

by Raymond D. Larson
and
Joseph S. Zeisel

One of the economic facts of life that workers must face is that in some years they may have difficulty in finding jobs or in keeping jobs they already have, because an economy like that of the United States is subject to the ups and downs of business cycles.

On a few occasions in U.S. history, declines in business activity have been very severe and long lasting. These "depressions" have had far-reaching effects on nearly every person in the country. The last major depression in the United States occurred during the 1930's. At its worst in 1933, about one-fourth of the labor force was unemployed.

More often, the contractions in economic activity have been much milder than this--of relatively short duration and affecting directly only a small proportion of the population. Since the end of World War II, the economy has gone through two such "recessions" and is currently recovering from a third (chart 1).

The implications of temporary recessions on the choice of a career were discussed in some detail in an earlier article[1] which described how different industries, occupations, and areas were affected when business activity was on the downgrade. The present article describes the pattern of recovery from a recession and presents some economic implications of special significance to people planning careers.

The Recession of 1957-58

Each of the previous two postwar recessions had been relatively short, the downturn lasting approximately 1 year. Although the most recent recession has been somewhat sharper than the preceding two, the contraction phase of this recession proved to be shorter, lasting about 8 months.

The general downturn began in September 1957. In some manufacturing industries, the drop in employment and hours had begun earlier, but the sharpest and the most general decline in the economy occurred after August 1957. The tightening of employment opportunities during this period reflected the influence of a number of factors. A drop in consumer demand for automobiles and other durable goods, together with reduced business spending for capital goods added to a reduction of government spending for defense, resulted in a decrease in the number of nonfarm jobs by 2.4 million, or $4\frac{1}{2}$ percent, from the prerecession employment peak in August 1957 to a low point in April 1958. (Normal seasonal variations in employment are discounted in these figures.)

The largest employment decline was in manufacturing, particularly in those industries producing "hard" goods. Industries closely associated with manufacturing such as transportation and mining, also showed severe employment losses. The decline in construction and trade employment was more moderate than those in the manufacturing and closely related industries. Employment in services and finance, on the other hand, did not experience a general decline, while employment by State and local governments continued to rise throughout the

[1] See Business Cycles and the Choice of a Career (in Occupational Outlook Quarterly, May 1958).

Chart 1.

recession, mostly because school systems were expanding to take care of the very large number of children born since World War II.

In addition to a decline in manufacturing employment, the factory workweek dropped sharply--falling from an average of 40 hours at the start of the recession to a low of 38.5 hours in the spring of 1958. In many plants which spread the work rather than lay off a large number of workers, the decline in working time was much sharper than this, and the earnings of most of the workers who kept their jobs fell off considerably.

Despite this decline in payrolls, continued high levels of spending for consumer goods have been one of the most significant factors restricting the depth and duration of this recession. So-called built-in stabilizers also played their most prominent role so far in offsetting income declines caused by the recession. The most important prop to declining income was unemployment insurance, including the extended benefits under temporary programs which went into effect in the middle of 1958. Also, recent liberalization of the Old-Age and Survivors' Insurance program made retirement benefits available for the first time to a large number of self-employed farmers as well as to many older workers affected by the business decline. Thus, unemployment insurance and social security payments compensated significantly for the loss in payroll income.

In addition to government programs, there have also been stabilizing influences in the private economy, the most noteworthy of which are increased payments under supplementary unemployment compensation plans as well as severance pay and retirement.

After April 1958, employment and hours of work began to pick up. Recovery between April and September was

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relatively rapid. Since September 1958, however, employment increases have continued at a slower pace--despite continued gains in output. In some industries which have been severely affected by the recession, such as transportation and mining, recovery in employment has been very slow and many workers from these industries have been unemployed for long periods. In manufacturing employment, recovery has been modest during the winter, and most of this gain has been concentrated in the primary metals and automobile industries. In manufacturing as a whole, 8 percent of the workers were unemployed in February 1959, and in the automobile industry 13 percent were out of work.

Output and Employment

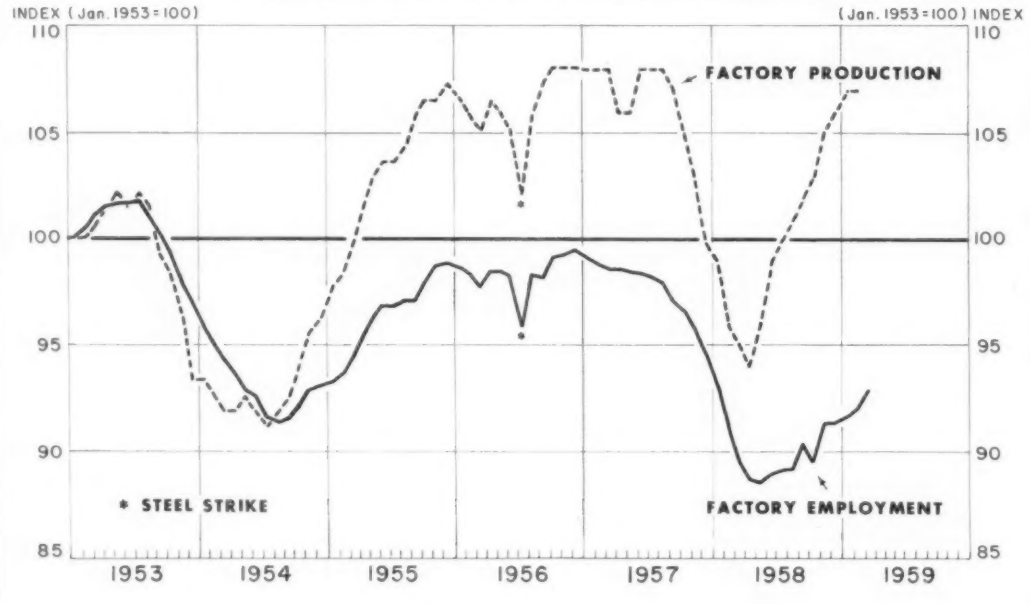
Large increases in output and modest gains in employment are not unusual during the early stages of recovery from recessions. One reason for this is that employers prefer to lengthen the workweek to increase production, rather than to recruit new help, particularly when employees are on a part-week schedule. Also, when the outlook for continued recovery remains uncertain, businessmen tend to resort to increased overtime work rather than the hiring of new workers who may shortly have to be laid off.

In addition, during a recession, employers have a cautious view of the immediate future. They therefore tend toward cost-cutting and more efficient use of production facilities and manpower. Moreover, when employers are operating at less than capacity, they attempt to utilize only their most efficient facilities. In some industries, heavy investments in automation machinery have resulted in highly mechanized production methods. All of these factors make for greater output per man and result in smaller increases in employment than in output (chart 2).

Chart 2.

FACTORY PRODUCTION PICKS UP FASTER THAN EMPLOYMENT DURING THE RECOVERY PERIOD

Manufacturing Employment and Output Indexes, Seasonally Adjusted



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Output-based on Federal Reserve Board, Employment-Index of Manufactures, Bureau of Labor Statistics

As hours of work increase and plant capacity approaches full utilization in the later stages of recovery, the opportunities for increasing output per worker by these methods decrease, and employment rises more rapidly. There are signs in the current situation that most of this recession-connected increase in output per worker has already taken place, and the outlook for employment gains is consequently brighter.

Employment Problems in Recovery

Despite the fact that future prospects are more encouraging, the slowness of recovery in a number of hard goods manufacturing industries, as well as in mining and transportation, has resulted in pools of unemployed workers in a number of cities. In only a few industrial centers has employment returned to prerecession levels. These unemployed workers face a serious problem. They have the alternative of waiting for their industries to rehire them, or they can attempt to go out and get new jobs. Moreover, when the main industries in a particular area are operating at low levels, other industries in the area are also usually affected. This means that job opportunities in general are likely to be relatively scarce in the community, so that unemployed workers are forced to consider the possibility of moving to other communities where employment opportunities are better.

This problem of forced mobility is not a new one in the American economy. It has existed before during periods of recession and depression, and it always exists to a certain extent, even during periods of sustained prosperity. In this Nation's dynamic economy, there are always some industries that are declining, even while most industries are booming. The development of new products and new ways of doing things implies not only the growth of new industries, but the decline of others. One recent example is the sharp contraction in coal mining employment as oil and natural gas have been increasingly used as fuel for heating. This has meant the contraction of employment opportunities in such coal mining areas as Pennsylvania and West Virginia. Another dramatic example is the decline during the last century and a half of agriculture as an occupation, resulting in a continuing flow of persons from rural to urban areas into new kinds of work.

For younger workers just entering the labor force, the prospect of moving is not likely to be as serious a matter as it is for older workers. Young workers are generally more prone to move in response to economic pressures and opportunities. (See table 1.) They have fewer family responsibilities and less attachment to their jobs and their community. On the other hand, the older worker has a much greater stake in his community. Older unemployed workers usually have relatively high seniority and are likely to be among the first to be rehired. They frequently own their own homes and have children going to school; often they have made plans to retire in the homes which they are buying and are unwilling to disrupt their life except under dire necessity. Finally, older workers are aware of the fact that they are at a competitive disadvantage in the job market, and this disadvantage becomes even greater when they are trying to find new jobs in strange communities.

However, age is not the only factor that is associated with the willingness to move. Studies have shown clearly that the better educated and better trained members of the labor force are much more mobile than those with low skills

Table 1. Mobility of persons 14 years of age and over, March 1955 to March 1956

Age	Migrants[1] (Percent of total in age group)
Total, 14 years and over	6.7
14 to 17	5.8
18 and 19	10.6
20 to 24	18.0
25 to 29	10.4
30 to 34	9.3
35 to 44	5.5
45 to 64	3.5
65 and over	2.8

[1]Persons who moved out of a county during the year.

and little education. Along with farm laborers and salesmen, whose work requires them to move frequently, professional and semiprofessional workers are among the most mobile of the occupational groups. (See table 2.) In fact, for many professional workers the labor market is virtually national in scope.

Conclusion

Young workers can expect to have some difficulty in getting firmly established in a job. Other things being equal, they are more likely to be laid off during recessions. What they can do to help themselves is to try to use these job changes to correct mistakes in job choice and, if they have the chance, to get additional training. In general, young workers with better education and occupational training are at a distinct advantage in adjusting to decreased occupational opportunities at home or expanding industries elsewhere.

Table 2. Mobility of men age 20-64 by occupation, March 1955 to March 1956

Occupation	Migrants[1] (Percent of total in age group)
All occupations	5.4
Farm laborers and foremen	13.4
Sales workers	8.6
Professional, technical, and kindred workers	6.5
Managers, officials, and proprietors, except farm--salaried	5.5
Operatives and kindred workers	5.5
Craftsmen, foremen and kindred workers	5.2
Laborers, except farm and mine	5.2
Managers, officials, and proprietors, except farm--self-employed	5.0
Clerical and kindred workers	4.2
Service workers, including private households	4.0
Farmers and farm managers	2.4

[1]Persons who moved out of a county during the year.

CAREER PATTERNS OF FORMER APPRENTICES

by Joseph H. Schuster
Bureau of Apprenticeship and Training

About one out of every five boys in high school today will make his living as a skilled craftsman. Since apprenticeship is recognized as a highly effective way of getting training for many crafts, boys with mechanical aptitude may want to know more about this form of training. They may ask, for example: What is apprentice training? Do I have to finish high school to get an apprenticeship? Does my father have to be a member of the trade? Would I be wasting some of the time spent in apprenticeship in learning unnecessary things? Does apprenticeship lead to secure jobs? Will it prepare me for advancement to supervisory jobs?

To answer the first of these questions, apprenticeship is a system of organized on-the-job training, with supplementary classroom instruction, through which the young worker gains the practical experience and theoretical background necessary to qualify him for journeyman status in his trade. Under the direct supervision of experienced journeymen, he progresses from the performance of simple job assignments in the early stages of apprenticeship to the most exacting requirements of his trade in the final periods. The apprentice is also given classroom instruction in the technical subjects related to his trade, such as blueprint reading, mechanical drawing, trade mathematics, or trade science. The term of apprenticeship for most trades is about 4 years, with some trades requiring as little as 2 years and a few specifying 5 or more.[1]

The large majority of apprenticeship programs in the United States train apprentices in building, metalworking, printing, and mechanical repair trades. The Bureau of Apprenticeship and Training of the U. S. Department of Labor, in cooperation with State apprenticeship agencies, encourages management and labor organizations to train apprentices to meet industry's need for skilled workers. Studying and improving the effectiveness of apprenticeship programs is a major objective of the Bureau.

One of the ways to evaluate current apprenticeship programs is to study how former apprentices have fared in their subsequent work careers. In addition to reporting their actual experiences, such workers are in a position to comment on the adequacy of the training they received and to suggest improvements. To obtain this kind of information, the Bureau of Apprenticeship and Training conducted a followup study of a sample of former apprentices who completed apprenticeship.[2]

The more than 38,000 apprentices who achieved journeyman status in 1950 by successfully completing apprenticeship programs registered with State apprenticeship agencies or the U. S. Department of Labor's Bureau of Apprenticeship and Training were the subject of this study. In 1956, mail questionnaires were sent to a sample (6,080) of these former apprentices. This report is based upon the information provided by the 3,278 who returned

*This article is based on the report, Career Patterns of Former Apprentices, U. S. Department of Labor, Bureau of Apprenticeship and Training, Bull. T-147, March 1959, 21 pp. Copies of the full report may be obtained on request to the Bureau of Apprenticeship and Training, Washington 25, D. C.

[1] For further details see Apprentice Training --An Investment in Manpower, U. S. Department of Labor, Bureau of Apprenticeship and Training, 1956, 32 pp.

[2] A similar study of a sample of former apprentices who failed to complete their training was conducted in 1954. See Followup Study of Former Apprentices, U. S. Department of Labor, Bureau of Apprenticeship and Training, Bull. 143, December 1954, 17 pp.

usable questionnaires. It describes the respondents' reasons for becoming apprentices, their work experience since completing apprenticeship, and their evaluation of their apprenticeship training. This information will be useful to young people planning careers in the skilled trades as well as to those persons concerned with planning and administering apprenticeship programs.

Why Respondents Decided to Serve an Apprenticeship

When asked to give their reasons for serving an apprenticeship, a majority of the respondents in each trade indicated that they made the decision because they "liked the trade" (table 1). Expectation of advancement opportunities was the reason for becoming an apprentice cited by the second largest number. Other reasons frequently given were good wages, employment security, and GI benefits; nearly one-third of the respondents indicated that they attached importance to each of these factors in arriving at their decisions.

In addition to asking respondents why they chose to become apprentices, the survey elicited information about their personal background which provides insight into some of the factors that influenced their occupational choices, such as sources of counsel, father's occupation, veteran status, educational attainment, and family responsibilities.

Nearly half of the respondents indicated that they were advised by their parents or close relatives to become apprentices. About one-fourth reported that employers gave them advice which assisted them in their decision. Other important sources of information on this subject were vocational counselors or teachers and union officials.

Table 1. Respondents' reasons for deciding to serve an apprenticeship

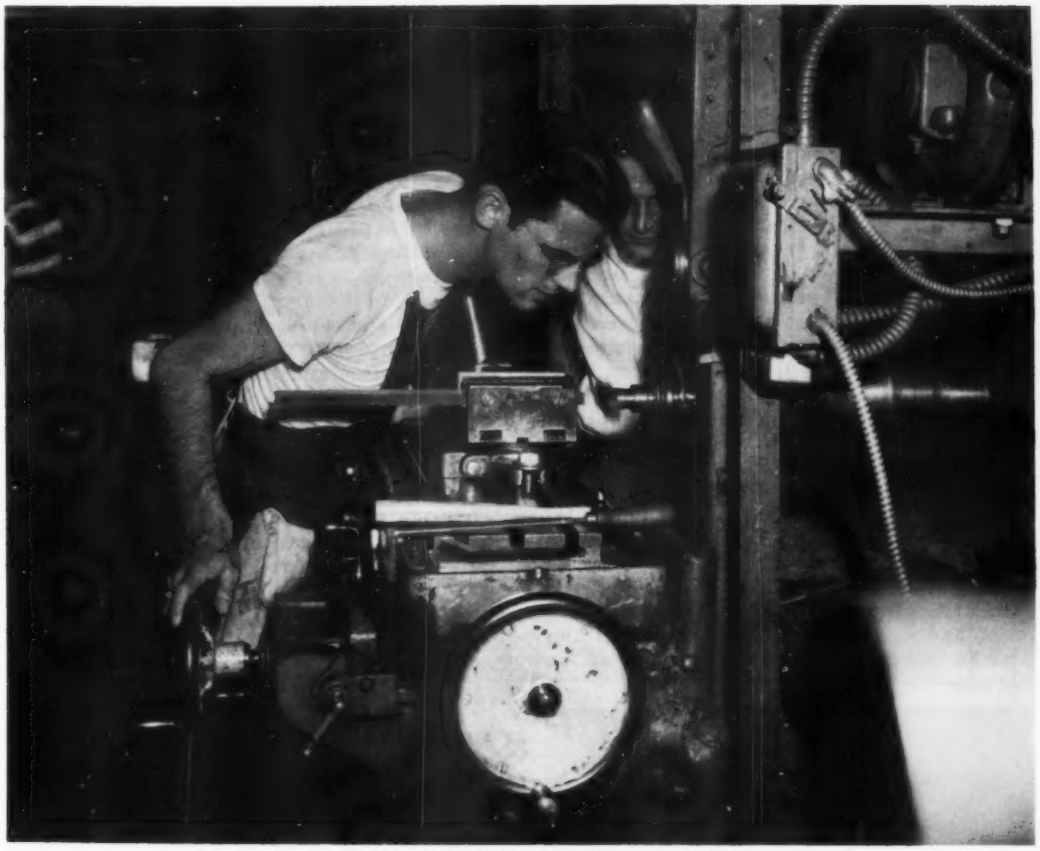
Reason given	Percent
Liked the trade	63.4
Advancement opportunities	38.4
Good wages	31.8
Employment security	31.7
Benefits of GI bill	31.3
Other	4.0

A sizable proportion (23 percent) of former apprentices reported that they were apprenticed in the same trade as their fathers. (See tabulation below.) Another 29 percent reported that their father's occupation was one of the other skilled trades. The father of 14 percent of the respondents were farmers. Eleven percent of the fathers were in the semiskilled or unskilled categories. The remaining 24 percent covered a wide range of occupations in professional, managerial, clerical, service, and other groups.

Occupation of apprentices' fathers	Percent
Total	100.0
Same trade as respondent	22.6
Other skilled trade	28.5
Semiskilled or unskilled occupation	11.4
Farmer	13.6
Other occupation	23.9

The tendency to follow the father's trade was strongest in the construction trades, where nearly a third of the respondents reported their apprentice trade to be the same as their father's trade. Trades with the highest proportion were bricklayer, painter, plasterer-cement mason, plumber-pipefitter, and carpenter.

Veteran status of the respondents is of particular interest because of the strong influence of GI bill benefits in inducing young men to enroll in planned training programs. Ninety-four percent of the respondents had served in the Armed Forces. The percentage of veterans was highest among those who served apprenticeships in the mechanic and repair trades (97 percent). Eighty-five percent of the former apprentices



The higher the training, the greater the earnings

who were veterans received monetary assistance under the GI bill. Subsistence allowances were received by 78 percent of the veterans who apprenticed in the construction trades, compared with more than 90 percent in other major trade groups. The proportion receiving subsistence benefits ranged from 58 percent for former bricklayer apprentices to 95 percent of those trained in the printing trades. The level of apprentice wages partially accounts for variations among trade groups in the relative numbers of veterans receiving assistance, since veterans whose monthly apprentice wages exceeded stipulated amounts were unable to qualify for subsistence benefits under the GI bill. Two-thirds of the veterans who received monetary assistance under the GI bill indicated that they would have completed their training even without such assistance.

Fifty-seven percent of the former apprentices were high school graduates, 31 percent had some high school education, and 12 percent did not advance beyond elementary school. The proportion that failed to complete high school appears unusually high, especially since many apprenticeship programs require that applicants have a high school education or its equivalent. Undoubtedly, many programs relaxed their educational requirements in the years immediately following World War II to permit the hiring of veterans who wished to serve apprenticeship. Furthermore, many

veterans acquired the equivalent of a high school education through experience and training received while in the armed services.

Participation in post-high-school educational programs before entering apprenticeship was reported by two-fifths of the respondents. The largest proportion received additional education or training from trade or technical schools. However, a significant number had received some college training. Many others participated in special schools or training courses while in the armed services.

Seventy percent of the former apprentices included in the study had one or more dependents prior to beginning their apprenticeship. A considerable number (16 percent) had three or more dependents. As might be expected, the families of the apprentices increased somewhat during the training program. By the time training was completed, 88 percent had one or more dependents, including 45 percent with three or more.

Supervisor demonstrates technical details to apprentice carpenter.

Employment Experience

Information about the work careers of the former apprentices studied provides a practical test of the effectiveness of their training. Did they stay in the line of work in which they were apprenticed? Did their training enable some of them to move into higher level jobs? Were they less subject to layoffs and other job changes because of their skills?

The survey sample of apprentices who completed training in 1950 showed a strong tendency to remain in the trade in which they were apprenticed. Six years after completing their training, 85 percent were working in their apprentice trades, 4 percent in closely related trades, and 4 percent in other apprenticeable trades.[3] Only 7 percent had shifted to occupations outside the skilled trades. Workers who had left the skilled trades were employed in a variety of professional, service, and other types of occupations. Only a few were employed in semiskilled or unskilled work.

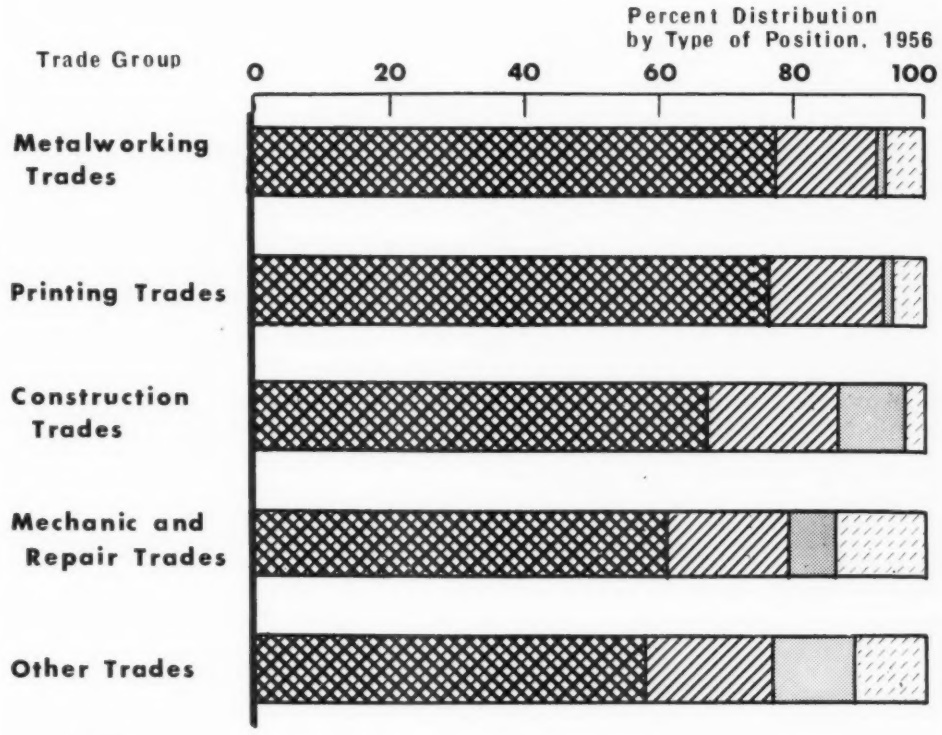
The proportion of respondents still working in their apprentice trades was generally higher among those completing apprenticeship in the building trades than in other trades. Former apprentices in metalworking showed a greater tendency to move to closely related trades than was the case in other occupational groups, with about 13 percent moving to related trades, compared with only 1 percent in the building trades. The greater tendency of metalworking craftsmen to move outside the trade in which they were apprenticed was due primarily to the similarity of skills required in these trades. For example, many machinists qualify as tool and die makers as a result of experience and training on the job; in contrast, it is unlikely that a bricklayer will become an electrician or that a carpenter will shift to the plumber-pipefitter trades.

[3]The term "closely related trade" is used to denote a substantial overlap between two or more recognized trades in such items as materials, machines, type of instruction, or basic knowledge required. For example, bricklayer is considered "closely related" to tile setter, but unrelated to carpenter.

While two-thirds of the former apprentices who completed training in 1950 were working at the journeyman level at the time of the study, a significant proportion (19 percent) had advanced to supervisory positions. A sizable group (8 percent) had moved into positions as contractors or employers; this was much more common among those who had been apprentices in mechanic and repair and building trades (15 percent) than among those who completed training in the metalworking and printing trades (4 percent). (See chart.)

More than 90 percent of the former apprentices in trades other than construction were employed full time in the 12-month period prior to the survey. As might be expected, the incidence and extent of unemployment was far heavier among former apprentices in construction than among those trained

MANY FORMER APPRENTICES ADVANCED BEYOND JOURNEYMAN LEVEL DURING THE 1950-56 PERIOD



UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

Source: Bureau of Apprenticeship and Training.

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in other trades. About one-fourth had been unemployed 1 week or longer, including 6 percent who were unemployed 10 weeks or more during the year. Construction workers are particularly subject to periodic unemployment because of the technology and organization of the industry. When work on a particular construction project is finished, a construction worker is occasionally without employment for a few days until he has been hired on a new project. Similarly, seasonality of the construction industry often results in periods of slack work.

Nearly half of the respondents reported that they had worked for only one employer since completing their apprenticeships. In most of these instances, the former apprentices were currently employed by the same employer under whom they served all or part of their apprenticeship. Changes in employer were, as might be expected, most common in the construction trades, where two-thirds of the former apprentices had worked for two or more employers. In contrast, only two-fifths of those trained in other trades had worked for two or more employers. An even more dramatic illustration of the instability of the construction trades is the fact that nearly one-fourth of those apprenticed in the construction trades had been employed by six or more employers. For the other major trade groups, only 2 percent had had as many as 6 employers during the 6-year period following apprenticeship completion.

Evaluation of Training Received During Apprenticeship

The respondents were asked to rate their on-the-job training on a three-level scale--very good, satisfactory, and unsatisfactory. About one-half of the respondents rated this phase of their training as very good, another large group (43 percent) considered this training as satisfactory, and only 6 percent reported their on-the-job training as unsatisfactory. In none of the major trades did the proportion of former apprentices rating their job instruction as unsatisfactory exceed 10 percent.

Virtually all of the former apprentices reported that the journeymen who supervised their training on the job were good instructors.

Nearly half (47 percent) of the respondents indicated that the related instruction (courses in public and private schools, and classroom instruction at the plant) they received helped them "a great deal" in their work. Another sizable group (35 percent) felt that they were assisted "moderately" by this phase of their training. Fourteen percent reported that their related instruction helped them "very little" in their work and a small number (3 percent) felt that this part of their training was "no help at all."

Most respondents highly recommended the type of apprenticeship program that they had completed to others planning work careers in the skilled trades (table 2). The proportion endorsing their apprenticeship was highest among those trained as electricians, plumber-pipefitters, and bricklayers. Some of the former apprentices refused to

Table 2. Respondents' attitudes on recommending apprenticeship to young people

Recommendations and reasons	Percent
Total respondents	100.0
Recommending program	86.3
Reasons for recommending:	
Provides good practical and theoretical training	29.9
Interesting work and employment security	24.3
Efficient way to learn skills	13.3
Other	18.8
Not recommending program	13.7
Reasons for not recommending:	
Dissatisfied with training	8.6
Poor wages	1.7
Insecurity of employment in trade	1.6
Wrong choice of occupation	1.2
Other	.6

recommend to others the apprenticeship program that they completed.

The overwhelming endorsement of apprenticeship reflects the rather close attachment of the large majority of the respondents to the trades in which they were trained. Despite criticism of some aspects of their on-the-job training or related instruction, nearly all felt that apprenticeship was the best way to prepare for careers in the skilled trades.

NEW SURVEY OF PREPARATION PROGRAMS FOR GUIDANCE AND STUDENT PERSONNEL WORKERS

A recent survey of institutions of higher learning provides a wealth of new information about existing programs for preparing guidance and student personnel workers. The study, which covers the 1956 summer session and the 1956-57 school year, was conducted by the U. S. Office of Education. Highlights of the findings are as follows:

▽ At least 223 institutions of higher education have a program at the graduate level for preparing guidance and student personnel workers.

▽ State-supported institutions of higher education reported a much higher percent of these preparation programs than did private institutions.

▽ Most of the institutions have a curriculum which differentiates preparation for student personnel work in colleges from that for guidance work in secondary and elementary schools.

▽ Grade average in undergraduate work is the most commonly used criterion in determining admission to preparation programs in guidance and student personnel work at the graduate level, with a "B" average required most frequently.

▽ Trainees in the college student personnel preparatory programs complete degrees, at both master's and doctor's levels, more frequently than do those preparing for guidance work in secondary and elementary schools.

▽ Counseling, at the master's level, and methods of research, at the doctor's level, are the areas of preparation most frequently required in the preparation program.

▽ The placement demands for guidance and student personnel workers exceed the number of persons being prepared.

The full report, Status of Preparation Programs for Guidance and Student Personnel Workers, Bulletin 1959 No. 7, U. S. Department of Health, Education, and Welfare, is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. This 50-page bulletin is priced at 25 cents.

THE CHANGING COMPOSITION OF THE AMERICAN WORK FORCE

by Sophia Cooper

At the turn of the century, if a person had asked "Who are the paid workers in the United States?", the simple and roughly accurate answer would have been "The men." Of a total population of about 76 million, 28 million were employed, and men accounted for 23 million of these.

The answer to the same question today would be very different. Changes in the kinds of work available, social attitudes toward employment of women, living standards, and many other factors have brought about a great increase in the proportion of women holding paid jobs, as well as other marked changes in the composition of the Nation's working population.

The Labor Force Today

Of every 100 Americans now living, 72 are 14 years of age or over, and 42 of these are in the "labor force"--either working or seeking work. These workers include men and women in a wide variety of personal circumstances. Some are young girls out of high school starting their first jobs; some are older men looking forward to retirement in a few years; some are widows working to support their children.

In 1955, men in the age groups 25 to 44 represented only about one-third of all workers; one-fourth were men over 44 years of age. (See chart.)

Women over 24, who made up less than 1 out of 10 workers in 1900 represented 1 out of every 4 workers in 1955.

Owing to the low birth rates of the thirties and the trend toward more years of schooling, young men 14 to 24 years of age accounted for only 1 out of 8 workers compared with 1 out of 4 in 1900. Young women in this age group accounted for 1 worker in 15.

Forecasting the Composition of the Labor Force

Further pervasive changes in the makeup of the labor force are expected in the years ahead. This article presents a general view of the major changes expected up to 1975. These facts can help young people who are looking ahead to their working years to anticipate and prepare for the kind of job market they will encounter as they begin their careers.

In attempting to forecast the size of the labor force in 1975, the first step is to estimate the probable size and makeup of the adult population. All those who will reach age 14 within the next 14 years are already born; the birth rate for the next few years, which can be predicted within rough limits, will determine the numbers of people who will turn 14 during the remainder of the period to 1975. After allowing for death rates, probable volume of immigration, and "labor force participation rates" (the percentage of the people in each age and sex group who will be in the labor force), we can arrive at fairly accurate guesses about the composition of the labor force in 1965 and 1975.

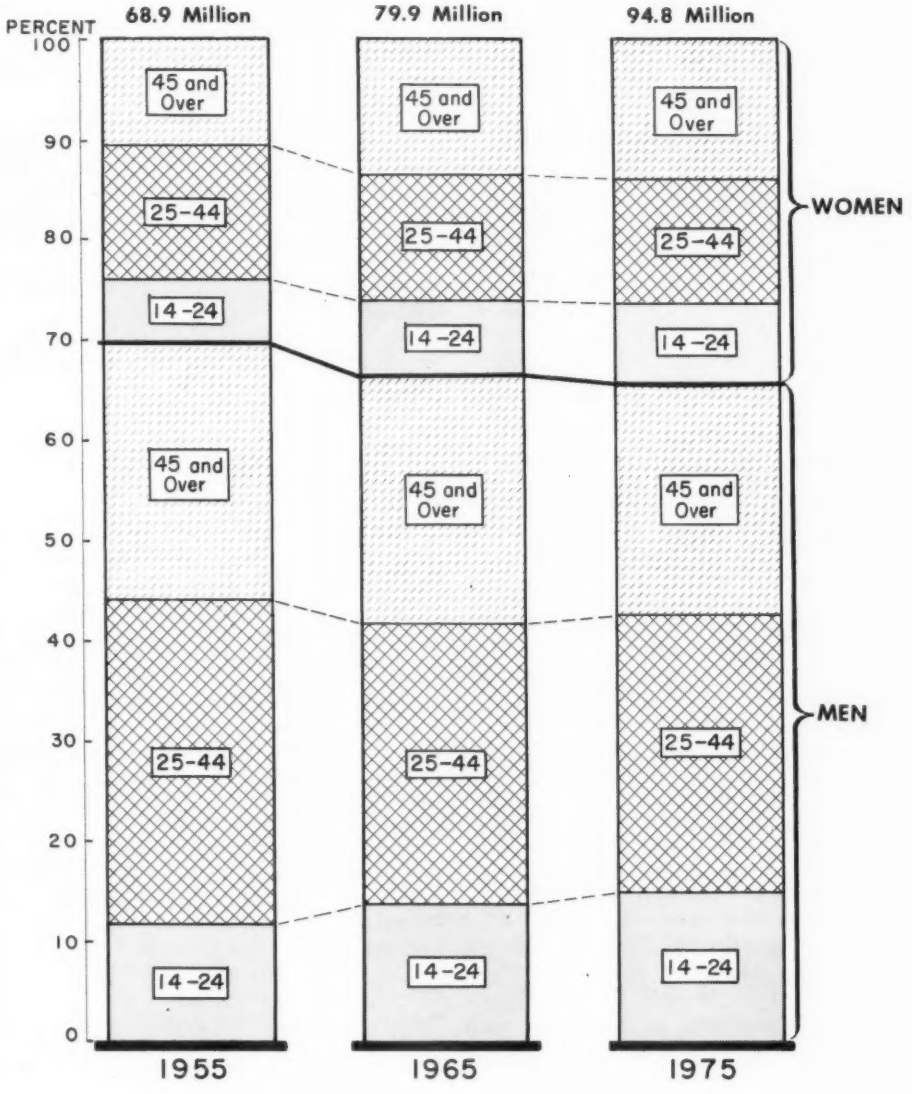
The following sections, based on a recent study made by the U. S. Department of Labor's Bureau of Labor Statistics,[1] describe the makeup of the labor force in 1965 and in 1975, and explain some of the reasons for the expected changes. The labor force as a whole is expected to grow very rapidly in this period--from 69 million in 1955

[1] Population and Labor Force Projections for the United States, 1960-75. 1959. BLS Bull. 1242.

THE CHANGING COMPOSITION OF THE LABOR FORCE

LABOR FORCE OF THE UNITED STATES 1955, AND PROJECTED 1965 AND 1975

By Age and Sex



UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

Source: U.S. Bureau of the Census.

to 80 million in 1965 and 95 million in 1975. However, this growth in itself would not be particularly significant if it were to occur uniformly through all of the groups represented in the total. The fact that this expansion will not be uniform warrants this presentation. These changes are therefore discussed in terms of percentages of the total labor force in order to focus attention on its makeup rather than its size.

Labor Force Changes, 1955-65

There will be 11 million more workers in 1965 than there were in 1955. The most obvious changes in the makeup of the labor force in this period will be an increase in the proportion of women workers and a decline in the proportion of men 25 to 44 years of age. The proportion of women workers is expected to grow from 30 percent to about 33 percent of the total. Women 45 years of age and older will show the greatest relative increase (from 11 percent to almost 14 percent of the total labor force); the middle group, 25 to 44 years of age, will show a slight decline; and the youngest group--14 to 24 years of age--will grow moderately.

Among male workers, who will make up the other two-thirds of the 1965 labor force, a rather drastic shift will occur in age distribution. The proportion of men in the central age groups (25 to 44 years of age) in the labor force will probably decline from 32 percent to 28 percent. Men 45 years of age and older will account for about one-fourth of all workers in 1965, or about the same proportion as in 1955. The only group of male workers who will grow at a faster rate than the labor force as a whole will be the 14- to 24-year age group, which is expected to increase from 12 percent to 14 percent of the total.

In summary, then, the 1965 labor force will have a higher proportion of women than that of 1955. The proportion of young workers of both sexes will increase, and there will be a decline in the proportion of men and women in the central age groups. Although men workers 45 and over will not gain proportionately, women in this age group will make up an increasing segment of the labor force.

Labor Force Changes, 1965-75

In the decade 1965-75, when the total number of workers will increase by 15 million, changes in the composition of the labor force will be less marked than those of the previous decade. For example, both the proportion and age distribution of women workers will remain about the same. Even among the men, the changes in age distribution will be slight, and these changes are interesting primarily as reflections of recent trends in population growth. As the high birth rates of the late 1940's and 1950's begin to make their impact on the working age groups, the proportion of younger workers will continue to grow.

Implications

How will these changes affect the individual starting a career in the years to come? Between 1955 and 1965, the decline in the proportion of male workers 25-44 years of age may mean a scarcity of skilled workers to fill the ever-expanding needs created by advancing technology and to replace the older men who retire or die. At the same time, as we have seen, a large number of adult women and young people under 25 will become available for work. Because there will be such a large wave of young people reaching working age, there will be much competition for entry jobs. Employers will have a wide choice in selecting people for beginning jobs, but may have considerable difficulty in hiring experienced workers. As a result, employers may have to train more young workers on the job. Many adult women who will be reentering the labor force may also require training in some kinds of work.

Although a majority of new entrants to the labor force will be seeking work on a full-time basis in the 1955-65 period, a substantial number of young

people and married women, especially those with young children, will want part-time jobs. Employers who are able to adapt their work schedules to use employees on a part-time basis will be in an advantageous position. Service and trade establishments, where much of the recent increase in part-time employment has occurred, will probably absorb a substantial part of the increase in the part-time work force.

The addition of so many young workers and women in the years ahead will undoubtedly cause an increase in the amount of job changing. Young workers tend to move from job to job in the period of settling into a permanent career, and women of all ages frequently move into and out of the labor force as their personal circumstances change. This contrasts sharply with the tendency of adult men to remain in the labor force once they have entered on a full-time basis.

Another important implication of these labor force trends for young people now in high school is that they will probably have better than average opportunities to advance to responsible positions, providing they have acquired the experience, training, and maturity expected of people in these jobs. The anticipated shortage of men in the 25 to 44 category will mean that some jobs usually filled by these men will be open to younger men and women who have demonstrated their capacity to handle them.

All things considered, today's high school student should secure as much education and training as possible for his chosen field in his first few years after graduation. A wasted year or two may bring severe penalties in tomorrow's labor market.

OUTSTANDING YOUNG SCIENTISTS HIRED BY FEDERAL GOVERNMENT

The Civil Service Commission is rapidly nearing its goal of recruiting 200 of the Nation's most promising young engineers and scientists for careers in research with the Federal Government. In a special written test given in February 1958, 105 seniors and recent graduates qualified for the research jobs. The additional jobs will be filled from the group of more than 500 students who had applied to take the second written test given late in March.

The test marks a departure from the usual procedures used in recruiting young engineers and scientists in that a written test is required. Ordinarily, such candidates are rated on the basis of their education and training. The Commission plans to conduct periodic followup studies of the appointees on the job to measure the effectiveness of the examination as a means of predicting success in research work.

The new research positions require applicants to hold at least a bachelor's degree in engineering, physical science, or mathematics, or to have completed requirements for a degree before appointment. The positions offer a minimum starting salary of $5,430 a year, which is almost $1,000 more than the starting salary paid to other beginning engineers and scientists who work for the Federal Government. All of the jobs are in Washington, D.C., or in the surrounding area.

EMPLOYMENT OUTLOOK FOR OFFICE-MACHINE OPERATORS*

by Daniel P. Willis, Jr.

Modern businesses use a wide variety of office machines--ranging from simple mechanical letter openers to complex electronic computers--to help speed up the handling of records, reports, and other paperwork. The clerks who operate these machines usually have job titles which identify them with the types of machines they operate, for example, adding-machine operator, calculating-machine operator, billing-machine operator, or key-punch operator.

Nature of Work

The nature of the operators' work depends on the type of equipment used. In the operation of some machines--billing, adding, and calculating machines--workers repeatedly press the numbered or lettered keys on the keyboard. Other machines--duplicating, mailing, and tabulating machines--run automatically for long periods once they are set in motion by operators who push the control buttons or switches. However, regardless of the equipment used, most office-machine operator jobs are of a routine nature. Operators are usually assigned a specific repetitive job to do on one type of machine. For example, an addressing-machine operator may spend most or all of his time running the machine that prints on envelopes the names and addresses of his employer's customers. However, an operator is sometimes given more varied assignments as in the case of a calculating-machine operator who may compute percentages or averages or make other statistical computations.

Billing-machine operators make up one of the largest groups of mechanical office equipment operators. These workers prepare customers' bills, statements, and invoices. By striking lettered and numbered keys, the operators transcribe information such as the customer's name, address, and the items purchased or services given. They then press keys to record amounts of money involved and the machine prints totals, net amounts, discounts, or other items. A company may have its billing operation broken down so that each machine operator handles certain types of accounts--for example, those of customers whose accounts are current.

Adding-machine operators use electric or, in a few offices, lever-operated machines to add and subtract and sometimes multiply groups of numbers. Calculating-machine or Comptometer operators use machines more complex than adding machines to make various computations in connection with financial accounts, payrolls, invoices, and numerous other business or statistical operations.

Mailing-machine operators run automatic mailing machines which address, fold, open, seal, and even stamp mail. The plates which are often used to address envelopes, newspapers, and other items run through the mailing machines are prepared by graphotype-machine operators. These workers customarily use a machine similar to a typewriter which makes raised letters and numbers on address plates.

Duplicating-machine operators reproduce many copies of typewritten or other material such as reports, advertising circulars, price lists, or speeches. The operator's main job is to set and adjust the machine; insert and remove papers, stencils, or other materials; and see that the machine works properly.

*This article is one of a series reporting on fields of work which could not be covered in the 1957 edition of the Occupational Outlook Handbook. It is part of the Bureau's continuing program of occupational outlook research.

For example, the operator of a Mimeograph duplicating machine inserts a stencil prepared by a typist, sets the cylinder speed, starts the machine, watches to see that the copy is clear, and that the stencil does not tear, and removes batches of printed work. He may stop the machine and replace the ink pad, adjust the ink flow, or make other minor adjustments.

Operators of tabulating machines and related equipment handle large quantities of punchcards in connection with the automatic processing of accounting and statistical information. To prepare the information so that it can be used in tabulating or electronic computing machine systems, key-punch operators use machines similar to the typewriter to punch a series of holes in cards. The cards are arranged in the proper sequence with automatic machines run by sorting-machine operators. Tabulating-machine operators insert the cards in machines which automatically analyze and translate the information punched in groups of cards, and finally print summary results on accounting records and other forms.

A small but fast growing group of office-machine operators tend the new machines which are a part of complex high-speed electronic computing systems. The job of the console operator is to follow instruction sheets and push control buttons on a central computer in order to process punchcards or magnetic tapes. He must watch his control panel for flashing lights which indicate that trouble has developed and decide what steps must be taken to make the machines work properly. Card-tape converter operators tend machines which transfer data from punchcards to tapes or vice versa, and high-speed printer operators run the machines that print the final results.

Many clerks occasionally operate office machines in connection with other types of jobs, but these workers are not covered by this statement, nor are typists, stenographers, or bookkeeping-machine operators.

Where Employed

It was estimated that well over 200,000 office-machine operators--approximately 80 percent of them women--were employed in 1958. Most of them worked in the large cities where central or regional headquarters of big businesses and large government offices are located.

Some office-machine operators are employed in nearly every industry. Almost a third of them work for manufacturing companies, and about a fifth for wholesale and retail firms. Large numbers are also employed in banks, insurance companies, and government agencies.

Training and Other Qualifications

Graduation from high school or business school is required for many office-machine operator jobs. Courses in the operation of office machines are helpful, and business arithmetic is valuable for the many jobs involving work with figures. A particularly helpful type of preparation is given in combined work and study programs offered in many local school systems; taking this type of program helps young people decide if they like the kind of work involved and gives them valuable part-time experience. Job applicants with some college education are frequently given preference for positions as console operators of electronic computers.

As a rule, employers give their new employees on-the-job training for office-machine operator jobs. The length of training varies from a week or so to several months, depending on the type of office machine. Only a few days are usually required to train operators of Mimeograph or mail-handling machines, for example. It may take a few weeks to give key-punch and calculating-machine operators basic training, after which they practice on the job in order to increase their speed. Generally, it takes several weeks to train operators of tabulating machines. Instruction is given on how to set and adjust these machines; in addition, some operators

learn how to do simple wiring of plugboards. Since the new electronic computing equipment is even more complex than tabulating equipment, a somewhat longer training period is often required for operators of card-to-tape converters, high-speed printers, and other related machines. Moreover, console operators of electronic computers need some basic training in programming work (preparing instructions for the machine to follow), since this knowledge helps in getting the machine to operate properly when trouble develops. Operators of tabulating and electronic computing equipment are often

Operators of modern office machines, such as these accounting and payroll machines, speed up recordkeeping

trained at company expense in special schools established by equipment manufacturers.

Finger dexterity and good coordination of eye and hand movements are important for most office-machine operator jobs. The ability to detect obvious errors in arithmetic computations is helpful to billing- and calculating-machine operators. Some mechanical ability is advantageous, especially to duplicating- and tabulating-machine operators.

Most employers follow a promotion-from-within policy, taking into consideration seniority and on-the-job performance based on the supervisor's ratings and recommendations. Promotion may be from a beginning routine job to that of a full-fledged machine operator who can handle varied assignments and who may help train beginners and check their work for accuracy; advancement may then be to a minor supervisory position and later to section head. Sometimes, employees are advanced by transferring them to the operation of a more complex machine --for example, from a tabulating machine to an electronic computing machine.

Employment Outlook

Many job openings for office-machine operators are expected during the early 1960's. Employers in private industry and government will continue to hire a growing number of office-machine operators, as businesses grow bigger and more complex and the volume of record-keeping, computing, duplicating, mailing, and other work that can be done by machine continues to mount.

The introduction of new and improved machines of the same general types now used in large numbers to speed up the processing of paperwork will also tend to expand employment of office-machine operators. Although some employers will install the newer and larger types of electronic machines, there is little evidence that the use of such equipment will cause much displacement of operators of smaller machines in the near future. The large machines used in office automation are expensive, and even big companies spend several months carefully weighing their advantages. After the equipment is ordered, a great deal of time usually passes before actual installation. Furthermore, most companies spend several months--sometimes a year or more--in so-called parallel operations; that is, during the period of transition the regular staff of office-machine operators performs the same or a part of the operation that is also being run on the computer. The number of service centers which use machines (including electronic computers) to do officework--such as sorting, mailing, and preparing payrolls--on a fee basis is expected to increase. This development will probably add to the number employed in office-machine operator jobs, since these service centers will be used by many small businesses which normally would not employ full-time operators.

Over the long run, it is expected that an increasing amount of clerical work will be taken over by large computers and other machines in electronic data-processing systems. Furthermore, smaller and less expensive types of electronic computers are expected to be used in a growing number of establishments that cannot afford the large computers. Other new office machines will probably become available and be used along with computers to speed up recording, copying, and other aspects of officework.

The net effect of these developments will be a slower growth in employment of office-machine operators over the long run. At the same time, the character of many jobs will change. For example, billing-machine operators in big companies may be largely replaced by programmers and operators of electronic computing machines. The demand for workers in jobs related to office automation systems will continue to grow. Many of the new office-machine operator jobs will be better paid and will require persons with higher levels of skill and training than the jobs they replace. Furthermore, many job

opportunities for office-machine operators will continue to arise from turnover, owing to the large numbers of young women in this field who stop working to marry or to take care of children.

Earnings and Working Conditions

Average weekly salaries ranged from about $53 to $85 for women in 5 office-machine operator occupations, according to a 1957-58 survey by the Bureau of Labor Statistics in 19 large metropolitan areas. Key-punch, billing-machine, and calculating-machine (Comptometer) operators received weekly salaries averaging from about $58 to $68 in most of the areas. Among the occupations surveyed, duplicating-(Mimeograph or Ditto) machine operators generally received the lowest weekly salaries--from about $53 to $63--and tabulating machine operators had the highest earnings--between approximately $65 and $85. Operators of the new electronic computers and auxiliary (peripheral) equipment generally receive salaries above those of tabulating-machine operators.

Earnings of operators of most types of machines may differ greatly by geographical location; for example, women key-punch operators averaged about $57 a week in Boston and $74 in the Los-Angeles-Long Beach area in late 1957 or early 1958. Men tabulating-machine operators received weekly salaries averaging about $71 a week in Boston and $97 a week in Cleveland.

The standard workweek for office-machine operators is usually 35 to 40 hours, depending on the industry. Some office-machine operators work late shifts; for example, operators of electronic computing systems--those at the computer console or operators of the machines that convert and print information--may work a 4 p.m. to midnight shift or a midnight to 8 a.m. shift.

Operators of most office machines must be able to adapt themselves to routine and repetitive work and to the noise made by their machines. Operators of machines such as key-punch, calculating, and billing machines are seated at desks most of the day, while operators of duplicating and tabulating machines and those operating electronic equipment may have to stand for long periods.

Office-machine operators usually receive at least 6 paid holidays a year and 2 weeks' paid vacation after a year's employment. They are usually covered by life insurance, pension, hospital, surgical, and other employee benefit plans.

NOTE: A few subscribers who sent in the request form for Occupational Information for Counselors, 1958 edition, from page 31 of the February issue were erroneously sent the old 1956 edition (red cover). If this happened to you, write us and we will immediately send you the revised 1958 edition (blue cover).

EARNINGS OF ENGINEERS IN 1958

by Leroy K. Wheelock *

The growing recognition in recent years of the importance of engineering to the national defense and to the economic well-being of the Nation has brought about substantial increases in engineers' earnings. Studies conducted by the Engineering Manpower Commission of the Engineers Joint Council indicate that median[1] earnings of engineers employed in all activities (industry, government, and education) have risen an average of more than 6.5 percent a year since 1953. In 1958, engineering graduates had median annual earnings of $8,750, compared with $7,750 in 1956 and $6,500 in 1953.[2]

Length of experience, type of employer, level of formal education, and individual professional competence have a considerable influence on engineers' earnings. Whereas some engineers earn as little as $4,000 a year, others progress to important executive positions in large companies at salaries as high as $100,000. However, the majority of the more than 800,000 engineers in the United States earned within $2,000 of the $8,750 median yearly income in 1958.

Starting Salaries

But what about beginning engineers? What can a young graduate of an engineering college expect to earn in his first job? In 1958, employers hired recent engineering graduates at a median salary of $5,850 a year, or nearly $495 a month. To be sure, some new graduates started at less than $4,000 a year, and a few received salaries as high as $10,000 a year. However, nearly all (90 percent) of the new graduates began at more than $5,000 a year.

Earnings Increase with Experience

Most engineers can look forward to a marked increase in earnings as they gain experience. Thus, the median yearly income of graduate engineers with 10 years of experience was about $9,100 in 1958, and that of engineers with 20 years of experience was $10,800. (See chart.) Nearly all (90 percent) of these men with 20 years of experience had earnings of at least $7,800 a year, and a few (10 percent) earned $15,700 or more. A small number in top-level executive positions had much higher earnings.

Salaries Vary by Type of Employer

It is evident that experience is a major determinant of an engineer's earnings. But it is certainly not the only one. Of importance also in determining salary levels is the type of employer for whom the engineer works--industry, government, or educational institutions.

Industry is by far the largest field of work for engineers--more than 600,000 engineers were employed in industry in 1958. In general, earnings of engineers are higher in industry than in either of the other two major types of employment. For example, the 1958 Engineering Manpower Commission survey shows that engineers at every

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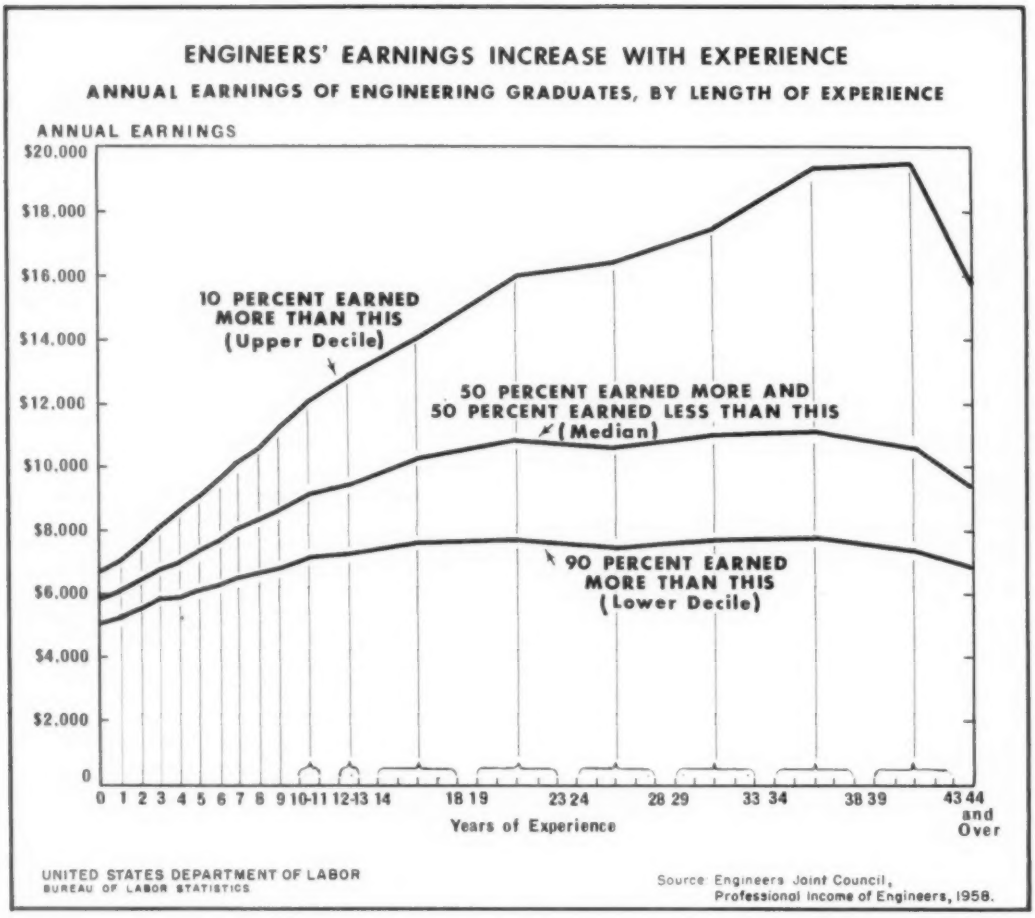
*Executive Secretary of the Engineering Manpower Commission of Engineers Joint Council.

[1]The median is the midpoint of any series. Thus, half of the engineers earned more, and half earned less than the median.

[2]Data contained in this article are based on Professional Income of Engineers--1958, the results of a survey conducted by the Engineering Manpower Commission in the summer and fall of 1958. The survey covered more than 190,000 engineers in industry, government, and educational institutions. Copies of the report may be obtained from the Engineering Manpower Commission, 29 West 38th Street, New York 18, N.Y. Price $3.


ENGINEERS' EARNINGS INCREASE WITH EXPERIENCE
ANNUAL EARNINGS OF ENGINEERING GRADUATES, BY LENGTH OF EXPERIENCE
ANNUAL EARNINGS
$20,000
$18,000
$16,000
$14,000
$12,000
$10,000
$8,000
$6,000
$4,000
$2,000
0
10 PERCENT EARNED MORE THAN THIS (Upper Decile)
50 PERCENT EARNED MORE AND 50 PERCENT EARNED LESS THAN THIS (Median)
90 PERCENT EARNED MORE THAN THIS (Lower Decile)
0 1 2 3 4 5 6 7 8 9 10-11 12-13 14 18 19 23 24 28 29 33 34 38 39 43 44 and Over
Years of Experience
UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
Source: Engineers Joint Council, Professional Income of Engineers, 1958.

level of experience had higher median earnings in industry than in either government or educational institutions. The median annual earnings of engineers in industry by level of experience were as follows:

Years of experience	Median annual earnings
1	$ 6,175
5	7,450
10	9,100
15	10,200
20	11,000
25	11,300

Earnings of graduate engineers also vary from one industry to another (table 1.) In the chemical industry, for example, median earnings of engineers with 10 years of experience were $9,500 a year, compared with $8,500 a year for a similar group of engineers in mining.

Government

Government service also provides many rewarding careers for engineers. In 1958, about 135,000 engineers were engaged in government activities--at the municipal (local) level, at the State level, and with the Federal Government. Although government salaries are not as high generally as those paid by industry, in recent years there have been notable improvements in government engineering

Table 1. Median annual earnings of engineers in selected industries, by years of experience, 1958

Industry	Years of experience		
	1	10	25
Aircraft manufacturing	$6,550	$9,200	$11,500
Chemicals manufacturing	6,075	9,500	13,000
Construction	6,050	9,100	11,000
Electrical machinery and electronics manufacturing	6,200	9,300	11,500
Mining	5,775	8,500	10,400
Petroleum industry	6,025	9,000	13,100
Utilities (electric; electric and gas)	5,775	8,200	9,600

salaries in Federal employment and also at State and local levels. In addition, there are many unique career opportunities for challenging engineering work in government service. Median annual earnings of engineers in Federal and State Government service were as follows:

Years of experience	Federal Government	State Government
1	$5,525	$5,850
10	8,400	7,750
20	9,400	8,100
25	9,600	8,300

Educational Institutions

Educational institutions are also important employers of engineers. A great deal has been written in recent years concerning the inadequacy of teaching salaries at all levels of educational instruction. Although salaries of engineering teachers in colleges and universities are still generally lower than those of engineers in industry or government, many improvements in salary levels have taken place in the past few years. Moreover, engineers in educational institutions are in a unique position to supplement their regular 9-month teaching salaries with income from other sources. These include consulting work, summer engineering employment, additional teaching, and research and development work in the laboratories of universities and private companies. As a result, engineering teachers generally have total incomes which are considerably higher than their basic teaching salaries. For example, engineers with 10 years of experience had a median teaching salary of $6,400 a year in engineering colleges in 1958; however, their median total income for the year was $8,500, more than $2,000 a year higher than their basic teaching salaries, as the following tabulation shows:

Years of experience	Basic teaching salary (9 months)	Total professional income (including teaching)
1	$4,675	$ 5,425
10	6,400	8,500
20	7,900	10,600
25	8,400	10,900

Level of Formal Education

Along with length of experience and type of employment, the extent of an engineer's formal education also directly affects his earnings. In general, engineers with master of science degrees (at least 1 year of study beyond the 4-year bachelor's degree) earn more than those with only bachelor's degrees, and those with doctor's degrees (at least 3 years of study beyond the bachelor level) earn even more. For example, in 1958 among engineers in industry with 5 years of experience, those with bachelor's degrees earned median salaries of $7,250 a year; those with master's degrees, $8,000; and those with doctor's degrees, $9,000:

Years of experience	Bachelor's degrees only	Master's degrees	Doctor's degrees
5	$ 7,250	$ 8,000	$ 9,000
10	9,000	9,750	11,000
25	11,200	11,750	15,600

Looking Ahead

We have spoken only of the current situation for engineers. What of the future? Average starting salaries for new engineering graduates should continue to rise in late 1959, probably reaching close to $500 a month. Capable engineers who apply themselves will have ever-widening opportunities to pursue rewarding careers--whether in industry, government, or education. In fact, for the well-trained engineer, whether beginner or experienced man, the future has never looked brighter.

EDUCATIONAL CHOICES OF KOREAN CONFLICT VETERANS

Business administration, engineering, and teaching are the three top choices of veterans attending college under the Korea GI bill, according to a recent Veterans Administration survey.

By December 1958, more than a million Korea veterans had received college training under the GI program. Another million had received other types of training in schools below the college level, and in on-the-job and on-the-farm training programs.

Of the GI college students who have indicated their major field of interest, 168,000 chose business administration; 145,000, engineering; and 106,000, teaching. Among the engineering students, electrical engineering was first choice, followed by mechanical and then civil engineering. Most of the veterans preparing for teaching careers have gone into general education, but several thousand have entered specialized fields such as industrial arts and physical education.

Other objectives attracting large numbers of Korea GI college students have been science, with 39,000; medicine and related professions, 49,000; business courses such as accounting and advertising, 36,000; social sciences, 30,000; law, 40,000; and the ministry, 10,000.

In addition to these major groups, smaller numbers of veterans have been preparing for a great variety of other careers, such as agronomists, zoologists, architects, dietitians, newspaper reporters, mathematicians, librarians, and law enforcement officials.

COLLEGE ENROLLMENTS SHOW RAPID GROWTH IN 1958

In the fall of 1958, the number of full- and part-time college students reached an alltime high of more than $3\frac{1}{4}$ million, according to the annual survey of college and university enrollments made by the Office of Education of the U. S. Department of Health, Education, and Welfare (table 1). This represents an increase of almost 200,000 (6.2 percent) over the total enrolled in the fall of 1957.

Enrollments of all students registering in college for the first time also reached an alltime high. In the fall of 1958, 781,000 students registered in a college or university for the first time, an increase of 7.0 percent over the 730,000 first-time enrollees of the previous year. Total enrollments in 4-year institutions, which accounted for almost 7 out of 8 college students in the fall of 1958, increased at a slightly faster rate (6.4 percent) than junior colleges (4.5 percent). This trend is even more evident in the first-year enrollment figures, which are more responsive to shifts in students' preferences. First-year enrollments of students in 4-year institutions increased by 7.8 percent whereas enrollments of students in junior colleges increased by only 4.4 percent.

Trends by Type of Institution

Liberal arts colleges and teachers colleges showed the greatest growth in both total and first-time enrollments. The total number of students registered in teachers colleges in the fall of 1958 increased by about 9.5 percent over the number registered in the fall of 1957. Total enrollments in 4-year liberal arts colleges increased during the same period by 10.3 percent. The number of students who registered in these institutions for the first time during the fall of 1958 increased even more than total enrollment. Whereas total first-time enrollments in all institutions increased by 7 percent over 1957, first-time enrollments increased by 10.3 percent in 4-year liberal arts colleges and by 14.9 percent in teachers colleges. This increase in enrollments in teachers colleges was made up of young men and women in almost equal numbers. This will come as welcome news to many educators and others who have been hoping to interest more men in school teaching.

Technological schools and "other professional" schools were the only institutions that showed a decrease in enrollment over the year. Changes in total enrollment and first-time enrollment in these two types of institutions as well as other types between the fall of 1958 and 1957 are given in table 1.

The fall of 1958 marked the second successive year in which total enrollment of women rose more rapidly than that of men. From 1957 to 1958 the total for women increased by two and a half percentage points more than did the total for men.

Although enrollment of men still accounts for approximately 65 percent of the total enrollment, the 1958 increase over 1957 in total enrollment of men accounted for only about 56 percent of the overall increase in the student population.

Another trend which continued in 1958 was the relatively greater increase in enrollment in publicly controlled institutions as compared with privately controlled schools. Enrollment in publicly controlled institutions increased by about 7.5 percent while enrollment in privately controlled institutions increased by only 4.5 percent. Increasing enrollments in junior colleges and in teachers colleges--both of which are largely publicly controlled--contributed significantly to this trend.

Table 1. Total and first-time college and university enrollments by type of institution and sex, fall 1958 and fall 1957

Type of institution	Total student enrollment (in thousands)		Percent change in total enrollment	First-time student enrollment (thousands)		Percent change in first-year enrollment
	Fall 1958	Fall 1957		Fall 1958	Fall 1957	
All institutions	3,259	3,068	+ 6.2	788	730	+ 7.0
Men	2,110	2,003	+ 5.3	469	445	+ 5.2
Women	1,148	1,065	+ 7.8	312	284	+ 9.9
Junior colleges	387	370	+ 4.5	175	168	+ 4.4
Men	249	238	+ 4.4	108	104	+ 3.6
Women	138	132	+ 4.7	67	64	+ 5.6
4-year institutions	2,872	2,698	+ 6.4	606	562	+ 7.8
Men	1,862	1,765	+ 5.5	361	341	+ 5.7
Women	1,010	933	+ 8.3	245	221	+11.1
Universities	1,436	1,373	+ 4.6	256	242	+ 5.8
Men	1,017	984	+ 3.4	169	163	+ 3.6
Women	419	390	+ 7.5	87	79	+10.3
Liberal arts colleges ..	909	827	+10.0	226	205	+10.3
Men	508	463	+ 9.7	119	108	+ 9.7
Women	401	364	+10.3	107	97	+10.9
Separately organized professional schools:						
Teachers colleges ..	323	295	+ 9.5	86	75	+14.9
Men	161	141	+13.8	43	37	+14.8
Women	162	153	+ 5.5	43	38	+14.9
Technological schools	97	98	- .1	19	20	- 5.3
Men	92	92	- .3	18	19	- 5.4
Women	6	6	- 1.5	2	2	- 3.9
Theological, religious schools	37	36	+ 2.7	5	5	+ 9.6
Men	29	29	+ .5	3	3	+ 4.6
Women	7	6	+12.9	2	2	+17.7
Other professional schools	70	71	- .6	13	14	-10.7
Men	55	56	- 2.5	9	11	-13.1
Women	15	14	+ 6.7	4	4	- 3.7

Note: Because of rounding, detail does not necessarily add to totals.

EARNINGS OF AMERICAN SEAMEN

Since the Nation's earliest days, the sea has held a strong attraction for venturesome American boys. A career in the merchant marine offers such a different kind of life from jobs on land that a young man thinking about entering this field of work will probably be much more influenced by his feelings about travel and the sea than by the amount of money he expects to earn. Nevertheless, information on pay rates can help him to form a realistic picture of some aspects of a seaman's life. This article describes the rather complicated way in which seamen's earnings are determined, and shows how much the average worker in each of the main seagoing jobs earned in 1957. It is based on a recent study of earnings of American seamen made by the U. S. Department of Labor's Bureau of Labor Statistics in cooperation with the U. S. Department of Commerce's Federal Maritime Board and Maritime Administration.

A seaman scrubs down the mast of a large ship

Seamen's Pay Rates

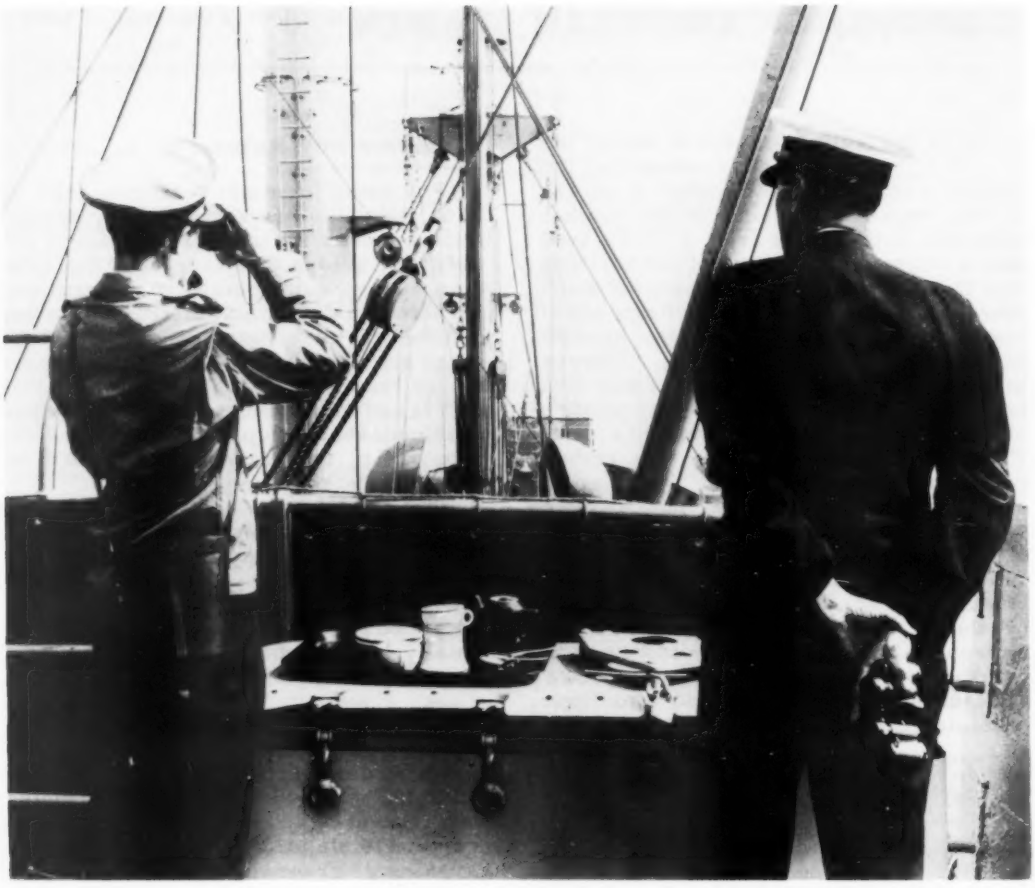
Pay rates for most seafaring jobs on U. S. flagships are arrived at by negotiation between steamship companies and the labor unions that represent the seamen. The resulting collective bargaining agreements determine the amount of pay and the way it is to be computed. Base rates are established on a monthly basis rather than on the hourly or weekly basis that is common in most shore jobs. When it is necessary to pay a man on a daily rate basis, this rate is reached by dividing the monthly rate by 30.

Besides their base rate, seamen receive premium pay for a wide variety of activities. For example, premium pay is usually received for standing watch on a weekend, and this rate is usually higher when the ship is in port than when it is at sea.

In addition to premium pay, all seamen receive "supplementary" pay for work under certain conditions. For example, when a ship is in a designated war risk area, specified daily bonuses are paid to all personnel. The collective bargaining agreements define under what conditions the premium and supplementary payments are to be made and the amounts to be paid to each of the different grades of personnel. In addition to this remuneration, room and board are generally provided by the shipping company at no cost to the seamen.

Daily Earnings

The average daily gross pay for men (except masters and cadets) who went to sea in American merchant vessels in May 1957 was $20.19 a day. Of this, $6.21 was payment for work calling for premium pay and 23 cents was for supplementary pay provisions. Thus, the average daily basic wage amounted to $13.75, or about two-thirds of seamen's average daily earnings. However, these overall figures obscure



Seamen and officers may have to stand watch on weekends as well as weekdays

important differences in earnings between licensed officers, who accounted for about one-fifth of all shipboard personnel, and unlicensed seamen, who made up the remaining four-fifths of the seamen covered by the survey.

Licensed officers (excluding masters) as a group averaged $29.80 a day. This included $8.21 for premium pay and 21 cents in supplementary pay. Among individual officers in the same rating (job classification) variations in daily earnings were considerable. The majority of officers within each rating, however, had daily earnings within a range of $5; for example, two-thirds of the 3rd mates earned between $25 and $30 a day.

Unlicensed seamen, as a group, averaged $17.56 a day, of which $5.66 was premium pay and 24 cents was supplementary pay. As in the case of licensed officers, some unlicensed seamen earned twice as much as others in the same rating. In most of the unlicensed ratings, however, the majority of seamen had daily average earnings within a $2 to $4 range.

In general, for both unlicensed and licensed personnel, the higher the rating, the wider the range of earnings. Average daily earnings for three grades of unlicensed seamen as well as two grades of officers are shown in the table.

Average earnings of five selected ratings in the United States merchant marine

Rating	Average earnings	
	Daily, Spring 1957	Annual[1], July 1, 1956-June 30, 1957
Officers:		
Second mates ...	$29.43	$8,110
Third assistant engineers	26.87	7,032
Unlicensed seamen:		
Able-bodied seamen	19.50	4,607
Oilers	17.38	4,315
Messmen	14.10	3,285

[1]Includes earnings for just those seamen who were employed in the industry during the first half of 1956 and after June 30, 1957, as well as during the 12-month period studied.

Regularity of Employment and Annual Earnings

About 100,000 qualified men, according to estimates, may seek work in the American merchant marine during any given year. However, the number of men actually employed at a particular time is considerably lower. In early 1957, for example, the industry provided approximately 60,000 shipboard jobs. This does not mean that there were 40,000 men looking for work at that time. Ocean voyages are generally long and confining and many seamen leave their ships at the termination of a voyage to take vacations or to work temporarily on shore.

Most seamen and officers are covered by labor-management agreements which require the companies to pay into a vacation fund a specified amount, or percentage of base pay, for each day of employment. Many unions require their members to take vacations after a certain number of days of continuous employment so that the work may be shared by all. Thus, many seamen find that they are able to hold temporary shore jobs between jobs at sea, and thus add to their yearly income. During a high employment year, however, many seamen are able to secure all the shipboard work they want. The average licensed officer in 1957 was employed for as many or more days as shore workers who worked a 5-day week throughout the year. If earned vacation time is added to the average employment of unlicensed seamen, they would have had, on the average, total employment almost equal to a 5-day week shore worker.

Many men go to sea only when employment opportunities are plentiful or just once or twice a year. The rest of the time they may have shore jobs. Any computation of seamen's average annual earnings which included these temporary workers would therefore understate the earnings that could be expected by a person spending most of his time as a seaman. To prevent this distortion, the annual wage material shown in the table is restricted to seamen who were employed in the industry not only during the 12-month period between July 1, 1956, and June 30, 1957, but also during the first half of 1956 and the second half of 1957. Furthermore, the annual wage material reported in the table is for only five ratings. However, these five ratings account for about 40 percent of the total number of men who worked at sea during this period. Two of the ratings represent licensed officers--second mates and third assistant engineers--and the other three represent unlicensed seamen--able-bodied seamen, oilers, and messmen.

INCREASES IN UNION WAGE SCALES OF BUILDING TRADES WORKERS

Minimum union wage scales in the building trades rose to an average of $3.38 an hour as of January 1959, according to the U. S. Department of Labor's Bureau of Labor Statistics quarterly survey of pay scales in 100 cities. This represented an increase of about 15 cents an hour, or nearly 5 percent over the January 1958 figure. This was about the same as the gain in each of the past 2 years.

Of the 6 major skilled trades, bricklayers had the highest pay scales ($3.93); some scales called for as much as $4.55 an hour. Plasterers, plumbers, and electricians had pay scales averaging about $3.75 an hour. Carpenters and painters had the lowest average rate levels of skilled workers in the building trades. Carpenters averaged $3.49 an hour and painters averaged $3.29 an hour. Building laborers averaged $2.50 an hour.

Many of the workers in building trade occupations have life insurance, hospitalization, and other types of health and welfare benefits as well as pension plans that are at least partially financed by employer contributions. The extent to which workers in the different cities are covered by insurance plans varies considerably from one trade to another. Further information about these benefits can be obtained by writing to the Bureau of Labor Statistics, U. S. Department of Labor, Washington 25, D. C.

Union hourly wage scales[1] for selected building trades in 100 cities, January 2, 1959

City	Bricklayers	Carpenters	Electricians	Painters	Plasterers	Plumbers	Building laborers
Albuquerque, N. Mex.	$3.900	$3.175	$3.450	$2.875	$3.500	$3.850	$2.075
Atlanta, Ga.	3.750	3.100	3.500	3.150	3.250	3.550	1.750
Baltimore, Md.	3.950	3.200	3.575	2.975	3.600	3.555	2.000
Birmingham, Ala.	3.850	3.050	3.425	3.000	3.170	3.400	1.800
Boise, Idaho	3.600	3.000	3.350	2.850	3.000	3.340	2.350
Boston, Mass.	3.800	3.400	3.700	3.100	3.650	[2]3.600	2.600
Buffalo, N. Y.	3.845	3.785	3.950	3.400	3.750	3.625	2.785
Burlington, Vt.	3.750	2.750	2.850	1.750	3.750	3.000	2.050
Butte, Mont.	3.500	3.125	3.450	2.900	3.250	3.550	2.300
Charleston, S. C.	2.750	2.500	3.100	2.000	2.750	3.400	1.250
Charleston, W. Va.	3.850	3.425	3.425	2.875	3.250	3.500	2.350
Charlotte, N. C.	3.100	2.400	2.900	2.000	2.625	3.100	1.395
Chattanooga, Tenn.	3.750	3.050	3.400	2.800	3.300	3.500	1.900
Cheyenne, Wyo.	3.750	2.940	3.280	2.850	3.250	3.150	1.950
Chicago, Ill.	3.825	3.650	3.900	3.500	3.700	3.730	2.775
Cincinnati, Ohio	3.700	3.575	3.820	3.200	3.625	3.725	2.625
Cleveland, Ohio	3.865	3.890	3.950	3.565	3.830	3.790	3.150
Columbia, S. C.	2.500	2.000	2.900	2.250	2.500	3.250	[3]
Columbus, Ohio	3.850	3.400	3.600	3.100	3.500	3.600	2.500
Dallas, Tex.	3.875	3.175	3.375	3.000	3.625	3.450	1.775
Dayton, Ohio	3.765	3.375	3.775	3.250	3.425	3.700	2.445
Denver, Colo.	3.750	3.340	3.600	3.075	3.475	3.650	2.170
Des Moines, Iowa	3.925	3.250	3.500	3.000	3.375	3.559	2.500
Detroit, Mich.	3.770	3.400	3.800	3.250	3.660	3.735	2.650
Duluth, Minn.	3.510	2.960	3.380	2.950	3.350	3.330	2.310
El Paso, Tex.	3.750	3.100	3.450	2.675	3.375	3.550	1.700
Erie, Pa.	3.900	3.490	3.675	3.040	3.575	3.650	2.550
Evansville, Ind.	3.625	3.100	3.430	3.100	3.350	3.425	2.200
Fargo, N. Dak.	3.600	2.620	3.100	2.500	3.250	2.950	1.920
Grand Rapids, Mich.	3.950	3.300	3.460	2.850	3.500	3.700	2.500
Hartford, Conn.	3.750	3.350	3.900	3.100	3.750	3.520	2.500
Houston, Tex.	3.875	3.260	3.650	3.100	3.500	3.425	1.850
Indianapolis, Ind.	3.800	3.375	3.650	3.300	3.600	3.600	2.375

See footnotes at end of table.

Union hourly wage scales[1] for selected building trades in 100 cities, January 2, 1959--Continued

City	Bricklayers	Carpenters	Electricians	Painters	Plasterers	Plumbers	Building laborers
Jackson, Miss.	$3.500	$2.850	$3.150	$2.625	$2.875	$3.400	$1.450
Jacksonville, Fla.	3.450	3.000	3.650	2.725	3.200	3.500	1.200
Kansas City, Mo.	3.850	3.325	3.475	3.250	3.625	3.500	2.355
Knoxville, Tenn.	3.700	3.000	3.280	2.700	3.250	3.400	1.850
Lansing, Mich.	3.900	3.330	3.600	3.080	3.880	3.600	2.530
Las Vegas, Nev.	4.150	3.575	4.050	3.450	4.150	4.050	2.850
Little Rock, Ark.	3.500	3.050	3.250	2.600	3.300	3.250	1.650
Los Angeles, Calif.	3.850	3.375	[4]3.984	3.460	4.000	3.900	2.680
Louisville, Ky.	3.850	3.400	3.550	3.150	3.400	3.550	2.350
Madison, Wis.	3.550	3.100	3.550	3.000	3.400	3.280	2.550
Manchester, N.H.	3.850	3.090	3.100	2.430	3.850	3.200	2.400
Memphis, Tenn.	3.750	2.950	3.450	2.870	3.220	3.410	1.600
Miami, Fla.	3.600	3.250	3.500	3.120	3.600	3.500	1.680
Milwaukee, Wis.	3.650	3.400	3.420	3.150	3.410	3.510	2.620
Minneapolis, Minn.	3.725	3.300	3.380	3.150	3.400	3.420	2.550
Mobile, Ala.	3.785	3.050	3.525	3.025	3.400	3.700	1.780
Montgomery, Ala.	3.250	2.600	3.100	2.750	2.750	3.350	1.200
Nashville, Tenn.	3.750	2.950	3.175	3.000	3.250	3.500	1.500
Newark, N.J.	4.300	4.150	4.250	3.700	4.300	4.250	3.350
New Haven, Conn.	3.650	3.350	3.750	3.100	3.650	3.500	2.600
New Orleans, La.	3.525	3.000	3.475	2.625	3.070	3.400	1.750
New York, N.Y.	4.550	4.200	3.900	3.360	4.350	4.250	3.450
Norfolk, Va.	3.500	2.750	3.300	2.840	3.375	3.400	1.500
Oakland, Calif.	3.750	3.325	3.910	3.350	3.640	4.100	2.685
Oklahoma City, Okla.	4.000	2.975	3.500	2.900	3.500	3.570	2.050
Omaha, Nebr.	3.700	3.250	3.575	2.850	3.500	3.500	2.225
Peoria, Ill.	3.925	3.500	3.700	3.225	3.775	3.750	2.850
Philadelphia, Pa.	4.000	3.635	4.225	3.175	4.050	4.000	2.350
Phoenix, Ariz.	4.000	3.360	3.800	3.000	3.710	3.750	2.360
Pittsburgh, Pa.	4.200	3.675	4.350	3.450	3.825	4.000	2.450
Portland, Maine	3.500	2.850	3.150	2.100	3.250	3.350	2.200
Portland, Oreg.	3.800	3.100	3.500	3.075	3.400	3.490	2.670
Providence, R.I.	3.750	3.075	3.400	2.850	3.550	3.350	2.375
Raleigh, N.C.	2.750	2.200	2.625	1.900	2.750	2.750	1.250
Reading, Pa.	3.700	3.100	3.550	2.700	3.350	3.350	2.160
Richmond, Va.	3.500	2.750	3.150	2.250	3.120	3.400	1.500
Rochester, N.Y.	3.835	3.550	3.670	3.300	3.835	3.470	2.715
Rock Island, Ill. (Dist)[5]	3.750	3.150	3.650	3.000	3.400	3.500	2.500
St. Louis, Mo.	4.050	3.725	3.955	3.415	3.800	3.850	2.625
St. Paul, Minn.	3.725	3.300	3.380	3.150	3.400	3.420	2.550
Salt Lake City, Utah	3.770	3.075	3.350	2.860	3.500	3.450	2.200
San Antonio, Tex.	3.500	3.000	3.375	2.750	3.625	3.425	1.450
San Diego, Calif.	4.000	3.475	4.100	3.390	3.875	3.900	2.660
San Francisco, Calif.	3.950	3.325	3.910	3.350	3.740	3.820	2.685
Santa Fe, N. Mex.	3.900	3.175	3.450	2.875	3.500	3.850	2.075
Savannah, Ga.	3.400	3.000	3.350	2.500	2.750	3.450	1.550
Schenectady, N.Y.	3.600	3.275	3.750	2.850	3.600	3.550	2.500
Scranton, Pa.	3.625	3.050	3.350	2.625	3.525	3.350	2.325
Seattle, Wash.	3.900	3.320	3.650	3.215	3.570	3.810	2.850
Shreveport, La.	3.750	2.950	3.475	2.900	3.500	3.300	1.650
Sioux Falls, S. Dak.	3.625	2.650	3.300	2.400	3.000	3.350	1.875
South Bend, Ind.	3.800	3.125	3.500	2.900	3.310	3.500	2.400
Spokane, Wash.	3.890	3.130	3.575	3.000	3.450	3.810	2.600
Springfield, Mass.	3.525	3.200	3.400	2.950	3.525	3.500	2.325
Syracuse, N.Y.	3.725	3.345	3.800	3.000	3.600	3.505	2.575
Tampa, Fla.	3.400	2.900	3.500	2.650	3.400	3.400	1.475
Toledo, Ohio	3.830	3.720	3.800	3.390	3.720	3.750	2.840
Trenton, N.J.	4.000	3.725	4.350	3.350	4.000	4.000	2.750
Tulsa, Okla.	3.750	3.175	3.475	3.100	3.375	3.580	2.150
Washington, D.C.	3.900	3.500	3.900	3.465	3.700	3.960	2.300
Wichita, Kans.	3.750	3.000	3.350	2.750	3.375	3.600	2.200
Wilmington, Del.	3.825	3.550	3.825	3.075	3.700	3.800	2.150
Worcester, Mass.	3.700	3.400	3.450	2.950	3.700	3.350	2.550
York, Pa.	3.425	2.850	3.350	2.450	3.250	3.250	1.925
Youngstown, Ohio	3.855	3.675	3.750	3.315	3.725	3.660	2.645

[1]These scales represent the minimum wage rates (excluding holiday and vacation payments regularly made or credited to the workers each pay period) agreed upon through collective bargaining between employers and trade unions.

[2]Excludes 10 cents vacation allowance which is included in negotiated scale of $3.70.

[3]No union scale in effect on survey date.

[4]Excludes 4 percent vacation allowance which is included in negotiated scale of $4.15.

[5]Includes Rock Island and Moline, Ill., and Davenport, Iowa.

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